Removal Recommendation
Degradation of Aesthetics Beneficial Use Impairment
St. Marys River Area of Concern

Issue

Based on two cycles of monitoring data collected by Michigan Department of Environmental Quality (MDEQ) staff, the Office of the Great Lakes (OGL), Areas of Concern (AOC) program requests concurrence with its recommendation to remove the Degradation of Aesthetics Beneficial Use Impairment (BUI) from the US side of the St. Marys River AOC. This request is made in accordance with the process and criteria set forth in the *Guidance for Delisting Michigan's Great Lakes Areas of Concern* (Guidance) (MDEQ, 2008).

Background

The following description is paraphrased from the 1992 Remedial Action Plan (RAP) update, discussing specific aesthetic problems at the time: the Degradation of Aesthetics BUI was impaired in the St. Marys River as a result of nuisance levels of floating material being periodically reported along the north shore of Sugar Island in the Lake George Channel (OMOE and MDNR, 1992). In addition to nuisance floating material, the East End Waste Water Treatment Plan (WWTP) and Algoma Steel were identified as major point sources contributing to over 88 percent of the oil and grease to the river, followed by St. Marys Paper (EC et al., 2002).

For several years, the Chippewa County Health Department (CCHD) and the St. Marys River Binational Public Advisory Council (BPAC) have repeatedly expressed concern regarding sanitary trash washing up on the Sugar Island Township park beach, following wet weather events. Those materials may be originating from the East End WWTP in Sault Ste. Marie, Ontario, as a result of bypasses when the plant is inundated and unable to fully treat the volume of water it receives following significant rain storms. The material may also be litter form stormwater runoff and/or discharges from the storm sewer system.

2011 and 2012 Aesthetics Monitoring

Two cycles of assessments were conducted in 2011 and 2012, in accordance with the MDEQ's 2011 Statewide Aesthetics Assessment Workplan and Monitoring Protocol. Each of the St. Marys River monitoring sites was assessed as follows.

The date, time, GPS coordinates, weather conditions and water temperature were recorded at each monitoring site. Three water samples were collected in glass jars from below the water surface to assess water color, clarity and turbidity. All three sample jars were photographed together against a white backdrop. Any odors from the sample jars, visible debris, and obvious pollution (if any) in the River were recorded. Digital photographs were taken along the shoreline to the left, to the right, straight across, and directly into the water, along with any other condition, debris, etc. worthy of recording. Evidence of recreational activity, such as empty bait containers or people swimming was noted, along with any other observable conditions that may influence the decision as to the presence of a designated use impairment or a designated use being employed. Based on the total of those observations, each site was assessed as to whether it met the criteria for removing the Degradation of Aesthetics BUI.

At each monitoring location, a minimum of five photographs were taken and are available upon request, as are the individual monitoring data sheets completed at each site. Specific monitoring locations were chosen based on: historical RAP documents, input received from the BPAC, best professional judgment and personal knowledge of the MDEQ AOC coordinator, and physical access to the waterbody.

Overall, it appears that aesthetic conditions in the St. Marys River AOC have improved considerably, when compared with historic reports of those conditions from years ago. Many of the aesthetic conditions described in early RAPs and other related documents simply no longer exist. In part, this may be due to the successful implementation of National Pollutant Discharge Elimination System (NPDES) program permitting in the U.S., comparable wastewater treatment and control efforts in Canada, an increasing sense of resource stewardship by local resource users, improved environmental practices implemented by municipal, commercial and industrial operations in the AOC, and increased advocacy and educational outreach by organizations seeking to enhance and protect the resource.

Removal Criteria

According to the *Guidance*, this BUI will be considered restored when monitoring data for two successive monitoring cycles indicates that water bodies in the AOC do not have any of the following physical properties in unnatural quantities which interfere with any designated use:

- turbidity
- foams
- color
- settleable solids
- oil films
- suspended solids
- floating solids
- deposits

For the purposes of this criterion, these eight properties impair aesthetic values if they are unnatural – meaning those that are manmade (e.g., garbage, sewage), or natural properties which are exacerbated by human-induced activities (e.g., excessive algae growth from high nutrient loading). Persistent, high levels are those defined as long enough in duration, or elevated to the point of being injurious, to any designated use listed under Rule 323.1100 of the Michigan Water Quality Standards. Natural physical features which occur in normal ecological cycles (e.g., logjams/woody debris, rooted aquatic plants) are not considered impairments, and in fact serve a valuable ecological role in providing fish and wildlife habitat.

Aesthetics Monitoring Results and Analysis

The St. Marys River AOC was assessed on August 3, 2011 and May 23, 2012. See Figure 1 for locations. The goal was to monitor the sites at least once following a significant wet weather event, in order to evaluate the extent and severity of the sanitary trash problem at the Sugar Island township park. While a moderate amount of rain had fallen in the days prior to the August 3rd assessment, the monitoring crew only observed one small piece of trash that may have been related to a combined sewer overflow event.

Figure 1: St. Marys River Aesthetics Monitoring Locations

MDEQ staff communicated with the CCHD in the fall of 2011, in an attempt to coordinate the second assessment following a potential rain event causing debris to wash up on the park beach. Unfortunately, those conditions apparently did not occur in the fall of 2011. Snowfall in the winter was relatively light, so there was no major spring snowmelt to create those conditions. There was an absence of heavy spring rains in 2012, so MDEQ staff were unable to witness debris at the beach during that time, either. Finally, it was determined that the second round of monitoring needed to be completed, and if those conditions were so rare that we were unable to witness them over a period of approximately eight months, those conditions may not be persistent enough to impair one of the state's designated uses. This is a significant factor in determining whether the Degradation of Aesthetics BUI remains impaired. Therefore, the second assessment took place on Wednesday, May 23. Coincidentally, on Sunday evening, approximately 72 hours prior to the assessment, the Sault Ste. Marie area experienced a rain event where about ¼" of rain fell in a relatively short period, according to CCHD staff.

Three sites were assessed from shore, including: Ashmun Bay, the river at the campground behind the Elks Lodge, and the Sugar Island Township park on the north shore of Sugar Island on the US side of the AOC. Minnows, ducks and geese were observed, as were fishermen and evidence of people having fished from shore throughout the assessment areas. Goose droppings littered the beach area at the Sugar Island beach during the 2012 assessment, and a shoe and a bobber may have indicated recreational use at the site. No debris, films, scum, or other conditions were noted in quantities which would interfere with any of the state's designated uses at any of the sites during either of the assessments. A total of approximately 38 photos were taken, and 18 water samples were assessed through both monitoring cycles.

Rock rip rap, broken concrete and steel sheet piling were observed as methods for stabilizing shorelines, but these are ubiquitous conditions throughout waterfront areas and do not interfere with the state's designated uses. The site behind the Elks Lodge had very large chunks of concrete block at the water's edge, but again, this prevents erosion, and while it may be unsightly, it does not impair a designated use.

No unnatural odors were detected, no foams or oil sheens were observed, and only minimal discarded debris was found. Occasionally, the monitoring crew saw minimal floating trash that had washed ashore. It is the opinion of MDEQ staff that the US side of the St. Marys River AOC is no longer aesthetically impaired, following two rounds of monitoring.

Sugar Island Monitoring Work Group

While *E. coli* does not play a role in the criteria for determining an impairment of the Aesthetics beneficial use, it may sometimes be associated with sanitary trash deposits that have been found at the Sugar Island Township Park.

> *The Sugar Island Monitoring Workgroup (SIMWG) was established in February 2007 in response to reports of floating solids with high Escherichia coli (E. coli) levels periodically found in the Lake George channel of the St. Marys River. The multi-agency, bi-national workgroup was tasked by the Four Party Management Committee (consisting of representatives from the U.S. Environmental Protection Agency, Environment Canada, Michigan Department of Environmental Quality, and Ontario Ministry of the Environment) to develop and implement a monitoring plan to determine the source and nature of the floating materials and the cause(s) responsible for the periodic high levels of E. coli at the Sugar Island Township Park beach. In response to a recommendation from the report summarizing the 2007 results, the SIMWG developed and implemented an expanded monitoring plan for 2008* (SIMWG, 2009).

The monitoring conducted by the SIMWG was not necessarily intended to document the presence of materials that may impair the Aesthetics beneficial use, but its results are informative in this regard:

> *The monitoring plan consisted of a surveillance program involving a coordinated response to any reports of floating materials in the river and weekly water monitoring of 39 stations for E. coli by Chippewa County Health Department, Sault Ste. Marie Tribe of Chippewa Indians, Algoma Public Health and the Ontario Ministry of the Environment.*
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> *There were four incidents of floating material reported during the 2008 season; one incident each in May, June, July, and October. Samples were collected for the first three incidents, and were found to be natural materials (cotton likely from cottonwood trees, pollen, detritus, mayfly exuvia, and green/blue-green algae) except for one condom in a July 23 sample. Although not a focus of this study, the presence of blue-green algae in some 2007 and 2008 samples suggests that additional assessment is warranted given the potential toxicity of this material. The fourth incident, reported on October 20, was described as a dark gray material with a sewage-like smell. By the time the complaint was investigated the next day, the material was no longer present and a sample could not be collected* (SIMWG, 2009).

The above excerpt from the Executive Summary of the 2009 SIMWG Final Report indicates that in 2008, there may have been just two incidents when unnatural physical

properties were present. The rarity of those events cannot reasonably be considered persistent, high levels or long enough in duration to interfere with one of the state's designated uses. The following is an excerpt from the 2010 SIMWG Final Report for 2009:

> *There were four incidents of floating material reported during the 2009 season; two in April, one in August, and one in September. Samples were collected for all four incidents. The first sample, a white foamy substance, could not be identified but likely was a natural event. The second incident appeared to be algae, and quickly disappeared. The August and September incidents were more of a concern, as both consisted primarily of garbage debris and various hygiene products. Contingency monitoring conducted soon after the September incident did not find additional floating material, high E. coli levels, or any indication of overflows/bypasses from nearby wastewater treatment plants. These incidents likely were the result of washout from storm sewers or release from recreational boats* (SIMWG, 2010).

This summary indicates that in 2009, just two incidents may have occurred that included unnatural physical properties causing localized concerns. The fact that this occurs at all is regrettable, but again, potentially four incidents discovered over a two year period of intensive monitoring cannot be considered to be of a persistent, high level or long enough in duration to interfere with one of the state's designated uses.

Presentation of Findings

On July 31, 2012, staff of the MDEQ's Office of the Great Lakes presented the findings from both rounds of aesthetics monitoring in the St. Marys River AOC to the BPAC. Staff answered questions and discussed the monitoring protocol and related issues with BPAC members. At that meeting, MDEQ recommended removal of the Degradation of Aesthetics BUI, based on data and observations collected in 2011 and 2012, and asked the BPAC for a letter of support for this action.

In a letter dated February 19, 2013, the BPAC requested the MDEQ to perform an additional season of Aesthetics monitoring, claiming that the two rounds of monitoring in 2011 and 2012 were insufficient. The BPAC particularly emphasized the need to perform monitoring during or immediately following moderate to heavy wet weather events. However, it is highly informative and sufficient to conclude that if entities based in the AOC were unable to document persistent, high levels of unnatural physical properties that interfere with any of the state's designated uses during 2008 and 2009, combined with similar findings from the MDEQ's two seasons of monitoring in 2011 and 2012, the Aesthetics beneficial use is no longer impaired.

In its response letter dated May 6, 2013, the MDEQ declined to conduct a third round of monitoring, but encouraged the BPAC to gather additional information or data to help aid in its decision making. Further, the MDEQ encouraged the BPAC to evaluate the data collected by the SIMWG and any data collected by the Chippewa County Health Department. MDEQ pledged to consider any additional information as part of the process to determine whether the BUI remains impaired, which it made clear would be in 2013. To date, the MDEQ has not received any additional information, data, or analysis from the BPAC.

On July 30, 2013, MDEQ staff contacted the Chippewa County Health Department (CCHD) to see if they had any relevant information or data from 2013 that should be consider as a part of the St. Marys River AOC's Aesthetic BUI assessment. At that time the CCHD indicated that, as of August 1st, 2013, they had not received any complaints of debris on Sugar Island or at other locations in 2013 (Daley, 2013).

Recommendation

Based on observations, data, and photographs collected during two monitoring cycles MDEQ program staff recommend removal of the Degradation of Aesthetics BUI from the US side of the St. Marys River AOC. This recommendation is supported by the data presented in the Sugar Island Monitoring Work Group's 2009 and 2010 reports. The St. Marys River BPAC discussed the issue in detail at their July 3rd, 2012 and September 4th, 2013 meetings. During the September 4th, 2013 meeting BPAC members voted to support removal of the BUI. The BPAC submitted a letter dated DATE expressing support for this action (Attachment A).

This proposed action was public noticed for 30 days via a listing in the MDEQ Calendar. Supporting documents were posted on the MDEQ's AOC program web page for public review and comment from September 11, 2013 through October 14, 2013. Written comments received/not received?

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Attachments

Attachment A: St. Marys River BPAC's letter supporting BUI removal, DATE.

References

Bi-National Public Advisory Council For the St. Marys River Area of Concern, 2013. Letter to Mr. Rick Hobrla, Office of the Great Lakes, MDEQ, February 19, 2013.

Daley, Christine. 2013. Personal Communications on August 1st, 2013. Chippewa County Health Department, Michigan.

Environment Canada, 2005. St. Clair River RAP Progress Report, 2005.

Michigan Department of Environmental Quality. 2008. Guidance for Delisting Michigan's Great Lakes Areas of Concern. MI/DEQ/WB-06/001.

Michigan Department of Environmental Quality, 2011. Statewide Aesthetics Assessment Workplan and Monitoring Protocol.

Michigan Department of Environmental Quality, 2013. Letter to Mr. Mike Ripley, Chippewa Ottawa Resource Authority and BPAC, May 6, 2013.

Sugar Island Monitoring Work Group, 2009. 2008 St. Marys River – Sugar Island Monitoring: A Final Report of the Sugar Island Monitoring Work Group March 2009.

Sugar Island Monitoring Work Group, 2010. 2009 St. Marys River – Sugar Island Monitoring: A Final Report of the Sugar Island Monitoring Work Group June 2010.

Attachment A

St. Marys River Binational Public Advisory Council Letter of Support for the Removal of the Aesthetics BUI From Michigan's Portion of the AOC